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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,042	02/11/2002	Shaorong Liu	1093/201	7419

7590

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EXAMINER
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GORDON, BRIAN R

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/076,042

Applicant(s)

LIU ET AL.

Examiner

Brian R. Gordon

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 11 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-9, 12 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9-23-02.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: On page 1, the application number is missing from the Background of the Invention.

Appropriate correction is required.

### ***Claim Interpretation***

2. Claim 4 specifies the opening as being a pinhole. Applicant has not provided any special definition to clearly determine what is meant by "pinhole". The specification nor claim does not provide any numerical, structural dimensions for one to determine what size hole could be properly identified as a pinhole. Pins are manufactured in various sizes. For example there are pins used in tailoring of clothing and there are also various pins used in contact liquid dispensing in which minute volumes are transferred to a substrate. There are also pins and needles that are used for puncturing holes. For the reasons given above the examiner, has determined that a hole in a microfluidic device could be properly classified as a pinhole, hence meeting the limitation of the claim.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1-5, 7-9, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Sassi et al. US 2002/0153251.

Sassi et al. disclose microfluidic devices are provided where barriers are introduced between different compartments of the device to prevent fluid flow between the two compartments to control mixing. Such a microfluidic network may be formed from enclosed channels patterned into a substrate.

As device 10 is depicted, it has two side upper channels, 22 and 24 which face each other and provide a pathway intersecting with the main channel 10. The side channels 22 and 24 are referred to as upper to the extent that the flow of fluid in the main channel 12 (reaction channel) flows in the direction from port 14 to port 16. Upper side channels 22 and 24 have ports 26 and 28 for receiving electrodes 30 and 32, respectively, and components for performing the operations associated with the use of the device 10. The upper side channels 22 and 24 are open to the main channel 12, so that fluid may move between the channels. Along main channel 12 in the direction of flow is side chamber 34 (sample channel; claims 1, 7-9, and 12), having an inlet conduit 36 with port 38 (leads to outside source) and electrode 40, and a constricted outlet conduit 42 (constricted conduit as in claims 1-5 and 12).

FIGS. 2A-D are diagrammatic views of the process for creating a wall. In FIG. 2A a portion of a device 100 is shown having a major channel 102 and a side channel 104. Side channel 104 has port 106 into which electrode 108 intrudes. Side channel 104 has a constricted opening 110 at the juncture to the major channel 102. In FIG. 2B a fluid

composition 112 is introduced into side channel 104 through port 106 and moved to the constricted opening 110 by means of an electrical field (applying a driving force as required in claim 12) between electrode 108 and a second electrode, not shown.

***Allowable Subject Matter***

5. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. Claims 10-11 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach nor fairly suggest the two ends of the sample channel in fluid communication with a sample reservoir and a waste reservoir defined on the substrate respectively. The prior art also fails to teach or fairly suggest a microfluidic system, comprising: a substrate; a reaction channel defined on the substrate along which the sample migrates; a sample channel defined on the substrate from which the sample is introduced into the reaction channel; a constricted conduit interface in fluid coupling between the reaction channel and sample channel, through which the sample is injected from the sample channel into the reaction channel; a capillary tube having a first end depositing fluid on the sample-channel, and a second end coupled to at least one of a sample reservoir and an auxiliary buffer reservoir; and means for delivering sample and buffer to the sample channel via said capillary tube from said at least one of a sample source and an auxiliary buffer reservoir.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bunce; Roger A. et al.; Wilding; Peter et al.; Taguchi; Takayuki et al.; Reichler; Allen S. et al.; Gavin; Michael et al.; Christensen; Dennis E. et al.; Griffiths; Stewart K. et al.; Parce; John Wallace; Gorman; Anne Jessica et al.; Ramsey; J. Michael et al.; Chow; Calvin Y. H. et al.; Chow; Andrea W. et al.; Holl; Mark R. et al.; Andersson; Per et al.; Bedingham, William et al.; Handique, Kalyan et al.; Chung, Chen-Kuei et al.; Seki, Minoru et al.; Jakobsen, Mogens Havsteen et al.; Wixforth, Achim et al.; and Chan, Eugene Y. et al. disclose microfluidic devices.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

brg

  
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